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**Keystone**  **Steel & Wire**

**7000 SW Adams Street  
Peoria, Illinois 61641**

# **Revised Final Corrective Measures Proposal**

**Revision 1.0**

**April 12, 2005**



**ENTACT**

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## 1.0 INTRODUCTION

ENTACT Services LLC (ENTACT) has prepared this Final Corrective Measures Proposal on behalf of Keystone Steel and Wire Company (Keystone) for its manufacturing facility located in Peoria, Illinois (see Figure 1). This Report is being submitted per the requirements established in Section 18 of the December 20, 2000 Administrative Order on Consent (AOC) between Keystone and U.S. Environmental Protection Agency (EPA) Region 5.

### 1.1 Site Location and Description

The Keystone facility is an active facility located at 7000 SW Adams Street in Peoria County, Peoria, Illinois. The facility is located in an industrial area of southwest Peoria adjacent to the west bank of the Illinois River. The facility has been owned and operated by Keystone Consolidated Industries, Inc. since 1955.

Construction and operation of the Steel Works and Wire Mill at the facility began shortly after 1900. The plant began producing steel and wire products and later (in 1950s) added the Mid Mill complex to add wire production capacity. Steel was produced in open hearth furnaces until 1967 when the transition to electric arc furnaces was initiated. The last open hearth furnace was decommissioned in the 1980s and Keystone now operates two electric arc furnaces (one melting furnace and one refining furnace). All of the areas where contaminated media exist are located within the confines of Keystone's industrial complex on land that is zoned for industrial use. Operation of the property has been industrial for over 100 years and its use is anticipated to be industrial for the foreseeable future.

### 1.2 Site Background

The AOC was established as part of U.S. EPA's implementation of the Environmental Indicators (EI) program under the Government Performance and Results Act (GPRA), as a follow-up to the original RCRA Facility Assessment (RFA) performed at Keystone in 1987. The 1989 RFA Report identified several areas of potential concern, and five of these areas were targeted for further investigation during a U.S. EPA site visit conducted in November 1999. Those five units were specifically listed in the AOC. In late summer 2001, Keystone procured new samples and analytical data at the five units identified as the Sheen Pond, F-Pond, Tail Tracks Landfill, East Pond, and Oil Skimmer Basin. The results of these investigations are described in the *Sampling Report for Environmental Indicators Assessment Investigation* submitted to U.S. EPA Region 5 on January 29, 2002. As presented in the original January 2003 *Final Corrective Measures Proposal*, corrective action is only being required at the F-Pond.

On January 29, 2002, Keystone submitted its *Environmental Indicators Assessment Report* (EI) to U.S. EPA Region 5. This report documented Keystone's draft determination that current human exposures to contaminated soil and migration of contaminated groundwater are under control at the facility. U.S. EPA approved this determination, but also requested that Keystone perform additional sampling to confirm whether corrective measures could be necessary in some of the other areas listed in the 1989 RFA, but not included in the 2000 AOC. To address these concerns, Keystone collected additional samples at the North Ditch Staging Area, Slag Processing Area, East Waste Pond, and East Sludge Pond in fall 2002. In

the fall of 2003, follow-up samples were collected in the East Waste Pond, and new samples were also collected from the North and South Sludge Lagoons.

Following its review of the new data, U.S. EPA requested that Keystone prepare a revised final corrective measures proposal to summarize the actions to be taken to protect human health and the environment from all current and future unacceptable risks that potentially could result from contaminated soil, sediment and groundwater at the facility.

For reference, the areas and units discussed in this Report are depicted on a layout map of the Keystone facility (see Figure 2).

### **1.3 Purpose**

This Report describes the final corrective measures that are proposed to mitigate current and future exposure risks due to contaminated soil and groundwater remaining at the facility. Final determination of areas requiring corrective action has been based upon the data presented to and approved by U.S. EPA in the January 2002 *Sampling Report for Environmental Indicators Assessment Investigation*, the January 2002 EI, the January 2003 *Final Corrective Measures Proposal*, and the May 2004 *Summary of December 2003 Sampling Activities at Keystone Steel & Wire Company* prepared by RMT.

Per the U.S. EPA's May 2, 2002, March 28, 2003, May 20, 2003, August 12, 2003, and May 19, 2004 approval letters, the areas of the facility where corrective measures will be required include the F-Pond and the North Ditch Staging Area.

## 2.0 CURRENT CONDITIONS

Soils in portions of the Keystone facility have been determined by U.S. EPA to be contaminated at levels above appropriately protective risk-based standards. The risk-based standards used for these determinations were the U.S. EPA Region 9 Preliminary Remediation Goals (PRGs). The areas were originally identified either during the 1987 RFA or during various sampling events performed at the facility since the completion of the RFA, as established within RMT's January 2002 *Sampling Report for Environmental Indicators Assessment Investigation*, RMT's January 2002 EI, RMT's January 2003 *Final Corrective Measures Proposal*, and RMT's May 2004 *Summary of December 2003 Sampling Activities at Keystone Steel & Wire Company* (The horizontal boundaries of each of these units have been established and depicted in the figures included in the referenced reports. The volume estimates discussed in this document are based on the areas delineated in the referenced reports). The remaining areas of concern at the facility are discussed below.

### 2.1 F-Pond

#### 2.1.1 Contaminants

Investigations at the five units listed in the AOC (the Sheen Pond, F-Pond, East Pond, Tail Tracks Landfill, and Oil Skimmer Basin) were conducted in late summer and fall of 2001. The results of the investigation were used to assess the potential impact from facility operations, and determine if any media in the areas were contaminated above risk-based standards. The new and historical data assessment was included in the January 2002 EI. As detailed in the EI and the original January 2003 *Final Corrective Measures Proposal*, of the five units listed in the AOC, corrective action is only being considered for the F-Pond.

Surface water and sediment samples collected from this area in 2001 were analyzed for several metals and volatile organic compounds (VOCs) detected during the 1987 RFA sampling event. The data from 1987 indicated that iron and manganese were present in the surface water above the tap water PRGs, and lead (for which no aqueous PRG has been set) was detected at concentrations above the federal drinking water standard. The 1987 data also included sediment sample concentrations for cadmium and lead above the industrial soil PRGs.

The 2001 results again detected iron and manganese above the tap water PRGs in one of the two surface water samples, and both samples contained lead (29 µg/l to 47 µg/l) above the federal drinking water standard (15 µg/l), but well below Keystone's NPDES-permitted discharge limit (200 µg/l). TCE was also detected in one sample at 2 µg/l, just barely above the method detection limit and the U.S. EPA Region 9 tap water PRG of 1.6 µg/l. However, the observed concentration in this sample was less than one-half of the federal drinking water standard for TCE (5 µg/l).

In the sediment samples, only lead and iron were detected at concentrations above the industrial PRGs. Iron concentrations in the sediment ranged from 21,000 mg/kg to 140,000 mg/kg, and lead concentrations ranged from 210 mg/kg to 3,100 mg/kg. The concentrations of both of these metals were below the PRGs



in the two southernmost samples (closest to the outlet of the F-Pond). The maximum cadmium concentration observed in the seven samples analyzed in 2001 (including one duplicate) was 3.7 mg/kg. VOCs were only detected in one of the sediment samples, and all were at concentrations well below the industrial soil PRGs.

### **2.1.2 Wetlands**

As part of the Corrective Measures Implementation Plan, a wetlands survey of the F-Pond area will be conducted. This information will be included as part of the Nationwide Permit 38 application to be submitted to the U.S. Army Corps of Engineers.

## **2.1 North Ditch Staging Area**

### **2.2.1 Contaminants**

Other areas of the facility where samples were collected in 1987, or which were discussed in the February 2001 *Current Conditions Report*, and the January 2002 EI were also assessed to determine if additional corrective measures would be required. Sampling was performed at the North Ditch Staging Area, Slag Processing Area, East Sludge Pond, and East Waste Pond in December 2002. Additional sampling at the East Sludge Pond and at the North and South Sludge lagoons was also performed in December 2003. The data for these areas indicated that corrective measures were only required for the North Ditch Staging Area.

This area was originally identified during closure confirmation sampling at the completion of remedial activity in the adjacent North Ditch in 1996. Lead contamination observed at this location, however, was determined to pre-date the construction of the soil treatment/staging area used during the North Ditch cleanup. IEPA approved the closure of the North Ditch, and has agreed with the conclusion that the observed contamination is not related to the contaminated sediment removed from the North Ditch.

Soil testing conducted in 1996 indicated the presence of lead above the IEPA clean-closure cleanup objectives (CUOs) for the North Ditch in the layer of fill soil overlying the native silty clay. Concentrations ranged from non-detect to 22 mg/l TCLP lead and 380 mg/kg to 12,000 mg/kg total lead. Groundwater sampling conducted in the area in 1998 confirmed that no migration of this lead was occurring (allowing clean closure of the adjacent North Ditch to be approved). The results of the 2002 sampling event confirmed the presence of elevated concentrations of lead in the fill soil around the former treatment system staging area, but that the underlying native soil (at about five feet below ground surface) has not been impacted.

### **3.0 CORRECTIVE ACTION OBJECTIVES**

The primary goal of the corrective action at the Keystone facility is to protect human health and the environment from all current and future unacceptable risks that could potentially result from contaminated soil, sediment and groundwater at the facility. Based on this goal, the following corrective action objective was developed for the Keystone facility:

- Reduce or eliminate the potential for direct contact, ingestion or inhalation of impacted soils and sediments with lead and/or iron concentrations which exceed the remediation goals for the F-Pond and the North Ditch Staging Area.

The remediation goals selected for the corrective measures and the applicable regulations associated with the corrective measures are further described in the following sections.

#### **3.1 Remediation Goals**

The remediation goals to be achieved during the corrective measures will be based on the U.S. EPA Region 9 PRGs (most recently updated October 1, 2004) for direct contact to industrial soil. The following PRGs are applicable to the corrective measures:

- F-Pond: 800 mg/kg total lead and 100,000 mg/kg total iron
- North Ditch Staging Area: 800 mg/kg total lead

#### **3.2 Applicable Regulations**

The federal and state regulations that are applicable to the implementation of the corrective measures at the Keystone facility are as follows:

- 40 CFR §261 and 35 IAC §721: Identification and Listing of Hazardous Wastes;
- 40 CFR §262 and 35 IAC §722: Standards Applicable to Generators of Hazardous Waste;
- 40 CFR §264, Subpart S and 35 IAC §724, Subpart S: Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities: Special Provisions for Cleanup;
- 40 CFR §268 and 35 IAC §728: Land Disposal Restrictions;
- 49 CFR §171 and §172: Hazardous Materials Transportation Regulations;
- 29 CFR §1910.120: Hazardous Waste Operations and Emergency Response;
- 29 CFR §1926: Safety and Health Regulations for Construction;
- U.S. EPA Region 9 Preliminary Remediation Goals;



- U.S. ACOE Nationwide Permit 38: Cleanup of Hazardous and Toxic Waste, if applicable;
- Clean Water Act and 35 IAC §309: General NPDES Permit for Stormwater Discharges from Construction Site Activities, Permit No. ILR10; and Permits (Water Pollution);
- 35 IAC §395: Procedures and Criteria for Certification of Application for Federal Permits or Licenses for Discharge into Waters of State;
- Oil Pollution Act of 1990: Spill Prevention, Control and Countermeasures Plan; and
- IAC 35 §740 and §742: Site Remediation Program and Tiered Approach to Corrective Action Objectives.

## 4.0 CORRECTIVE MEASURES ALTERNATIVES

Several corrective measures alternatives were considered for the F-Pond and the North Ditch Staging Area during the development of this corrective measures study. The alternatives were developed based on RCRA's threshold screening criteria. Those criteria are as follows:

- Protection of human health and the environment;
- Attainment of the applicable media cleanup standards; and
- Controlling the sources of the releases.

The alternatives considered for the F-Pond and North Ditch Staging Area that meet these criteria are described in the following sections. These proposed corrective measures are intended to address risks to human health and the environment under commercial/industrial land use scenarios.

### 4.1 F-Pond

Keystone has considered the following options for the remediation of lead and iron-impacted soils/sediments at the F-Pond.

#### 4.1.1 Alternative No. 1: No Action

Alternative No. 1 consists of no action. Under this alternative, no remedial action or institutional controls will be implemented.

#### 4.1.2 Alternative No. 2: In-situ Treatment/Off-site Disposal

Alternative No. 2 consists of the: 1) dewatering of the F-Pond surface water; 2) identification of characteristically hazardous soils/sediments; 3) in-situ treatment of characteristically hazardous soils/sediments, if present, to render the soils/sediments non-hazardous, when generated; 4) excavation of the treated and impacted soils/sediments to achieve the remediation goals; 5) off-site disposal of the excavated soils/sediments as non-hazardous waste at a Subtitle D disposal facility; and 6) deed restriction of the F-Pond to limit future use of the unit to commercial/industrial purposes. The components of this alternative are further described as follows:

- Surface water present in the F-Pond will be sampled to determine the nature and concentration of the contaminants of concern identified during previous investigations, i.e. lead, iron, manganese, and trichloroethylene (TCE). Based on these results, the surface water will be transferred directly to the facility's wastewater treatment plant (WWTP) for treatment, if needed, and discharge under the facility's industrial discharge permit. This discharge will be conducted by Keystone in compliance with the limits established in the NPDES industrial discharge permit.
- Samples will be collected from the F-Pond soil/sediment for laboratory analysis to determine if any of the soil/sediment exhibits the toxicity characteristic for lead (> 5 mg/l TCLP). A 50-foot by 50-

foot coordinate grid system will be used to guide the collection of these characterization samples, i.e. 1 composite sample will be collected from each 50-foot grid. The samples will be submitted for analysis of TCLP lead. Additional samples may be collected using the 50-foot grid system for delineation purposes, i.e. 1 composite sample per 50-foot grid. These samples will be submitted for analysis of total lead and total iron.

- Based on these results, soil/sediment that is determined to exhibit the toxicity characteristic for lead will be treated in-situ within the footprint of the F-Pond using the appropriate additive and dosage rate required to render the soil/sediment non-hazardous, when generated. Upon the completion of in-situ treatment activities, composite samples will be collected to verify that the treatment criteria were achieved, i.e. <5 mg/l TCLP lead. If the treatment criteria were not achieved, then in-situ treatment will continue until the treatment criteria are achieved and confirmed by laboratory analysis.
- Impacted soils/sediments with concentrations of the constituents of concern that exceed the remediation goals, i.e. 800 mg/kg total lead and 100,000 mg/kg total iron, will be dried or solidified, as needed, to ensure that free liquids are not present in the material for off-site disposal purposes.
- The treated soil/sediment and impacted soil/sediment with concentrations of the constituents of concern that exceed the remediation goals, i.e. 800 mg/kg total lead and 100,000 mg/kg total iron, will then be excavated to the appropriate depth, as guided by the use of an x-ray fluorescence (XRF) field screening unit. The excavated soil/sediment will be temporarily stockpiled within the limits of the F-Pond for consolidation purposes prior to off-site disposal as non-hazardous waste at a Subtitle D disposal facility.
- When XRF field screening indicates that excavation is complete, post-excavation confirmation samples will be collected to confirm that the remediation goals have been achieved. The post-excavation confirmation samples will consist of composite samples collected from the bottom and sidewalls of the excavation using the established 50-foot by 50-foot coordinate grid system, i.e. 1 composite sample per grid bottom and 1 composite sample per grid sidewall, for laboratory analysis of total lead and iron. If the laboratory results indicate that the remediation goals have not been achieved, then excavation of the impacted soil/sediment will continue until the remediation goals have been achieved and confirmed by laboratory analysis.
- The excavated portions of the F-Pond will be restored pursuant to the requirements of the Nationwide Permit 38 approved by the U.S. ACOE.
- A deed restriction will be required under this alternative to limit future use of the unit to commercial/industrial purposes.

Refer to Figure 3 for a summary of the remedial activities associated with this corrective measure alternative for the F-Pond.

#### 4.1.3 Alternative No. 3: Solidification/On-site Consolidation and Containment

Alternative No. 3 consists of the: 1) dewatering of the F-Pond surface water; 2) identification of characteristically hazardous soils/sediments, if generated; 3) in-situ treatment of soils/sediments that may exhibit the toxicity characteristic for lead, if generated, to less than 5 parts per million (ppm); 4) solidification of the soil/sediments for stability purposes; 5) consolidation of the treated and impacted soils/sediments to one portion of the F-Pond; 6) placement of an engineered cover over the consolidated soils/sediments with concentrations of the constituents of concern that exceed the remediation goals; and 7) deed restriction of the F-Pond to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover. The components of this alternative are further described as follows:

- Surface water present in the F-Pond will be sampled to determine the nature and concentration of the contaminants of concern identified during previous investigations, i.e. lead, iron, manganese, and TCE. Based on these results, the surface water will be transferred directly to the facility's WWTP for treatment, if needed, and discharge under the facility's industrial discharge permit. This discharge will be conducted by Keystone in compliance with the limits established in the NPDES industrial discharge permit.
- Samples will then be collected from the F-Pond soil/sediment for laboratory analysis to determine if the soil/sediment exhibits the toxicity characteristic for lead ( $> 5$  mg/l TCLP). A 50-foot by 50-foot coordinate grid system will be used to guide the collection of these characterization samples, i.e. 1 composite sample will be collected from each 50-foot grid. The samples will be submitted for analysis of TCLP lead. Additional samples may be collected using the 50-foot grid system for delineation purposes, i.e. 1 composite sample per 50-foot grid. These samples will be submitted for analysis of total lead and total iron
- Based on these results, soil/sediment that is determined to exhibit the toxicity characteristic for lead, if generated, will be treated in-situ within the footprint of the F-Pond using the appropriate additive and dosage rate required to achieve a concentration of less than 5 ppm TCLP lead. Upon the completion of in-situ treatment activities, composite samples will be collected to verify that the treatment criteria were achieved, i.e.  $< 5$  mg/l TCLP lead. If the treatment criteria were not achieved, then in-situ treatment will continue until the treatment criteria are achieved and confirmed by laboratory analysis.
- Impacted soils/sediments with concentrations of the constituents of concern that exceed the remediation goals, i.e. 800 mg/kg total lead and 100,000 total iron, will be solidified to ensure that the material can support the weight of the engineered cover.
- The treated and solidified soils/sediments will be excavated to the appropriate depth required to achieve the remediation goals, as guided by the use of an XRF unit, for consolidation in one portion of the F-Pond.
- When the XRF field screening indicates that excavation is complete, post-excavation confirmation samples will be collected to confirm that the remediation goals have been achieved. The post-

excavation confirmation samples will consist of composite samples collected from the bottom and sidewalls of the excavated portions of the F-Pond using the established 50-foot by 50-foot coordinate grid system, i.e. 1 composite sample per grid bottom and 1 composite sample per grid sidewall, for laboratory analysis of total lead and iron. If the laboratory results indicate that the remediation goals have not been achieved, then excavation of the impacted soil/sediment will continue until the remediation goals have been achieved and confirmed by laboratory analysis.

- An engineered cover consisting of 18 inches of clay and 6 inches of topsoil will be placed on the consolidation area in specified lifts and compacted. The excavated portions of the F-Pond will be restored pursuant to the requirements of the Nationwide Permit 38 approved by the U.S. ACOE.
- A groundwater monitoring program will be developed to confirm that there is no migration of the compounds of concern.
- A deed restriction will be required under this alternative to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover.

Refer to Figure 4' for a summary of the remedial activities associated with this corrective measure alternative for the F-Pond.

#### **4.2 North Ditch Staging Area**

Keystone has considered the following options for the remediation of lead-impacted soils at the North Ditch Staging Area:

##### **4.2.1 Alternative No. 1: No Action**

Alternative No. 1 consists of no action. Under this alternative, no remedial action or institutional controls will be implemented.

##### **4.2.2 Alternative No. 2: CAMU Treatment/Off-site Disposal**

Alternative No. 2 consists of the: 1) identification of characteristically hazardous soils; 2) excavation and treatment of characteristically hazardous soils, if present, within a designated storage/treatment corrective action management unit (CAMU) to render the soil non-hazardous and meet the applicable land disposal restrictions (LDR); 3) excavation of impacted soils to achieve the remediation goals; 4) off-site disposal of the excavated and treated soils as non-hazardous waste at a Subtitle D disposal facility; and 5) deed restriction of the North Ditch Staging Area to limit future use of the unit to commercial/industrial purposes. The components of this alternative are further described as follows:

- Samples will be collected for laboratory analysis from the locations in the North Ditch Staging Area where samples were previously collected in December 2002 to determine if the soil exhibits the toxicity characteristic for lead (>5 mg/l TCLP).
- Based on these results, soil that is determined to exhibit the toxicity characteristic for lead will be excavated and temporarily stockpiled within the storage/treatment CAMU. (The storage/treatment

CAMU will be located within the limits of the North Ditch Staging Area). The temporary soil stockpiles will then be treated using the appropriate additive and dosage rate required to render the soil non-hazardous and meet the applicable LDRs. Verification samples will be collected from the treated soil stockpiles at the frequency required to meet the receiving landfill's requirements to verify that the alternative LDR treatment standards for contaminated soil, pursuant to 40 CFR §268.49, have been met. If the treatment criteria were not achieved, then in-situ treatment will continue until the treatment criteria are achieved and confirmed by laboratory analysis.

- Impacted soils with lead concentrations that exceed the remediation goal of 800 mg/kg will be excavated to the appropriate depth (estimated to be approximately 2 feet below ground surface), as guided by the use of an XRF field screening unit. The excavated soil will be temporarily stockpiled within the limits of the North Ditch Staging Area pending off-site disposal as non-hazardous waste at a Subtitle D disposal facility.
- When XRF field screening indicates that excavation is complete, post-excavation confirmation samples will be collected to confirm that the remediation goals have been achieved. Post-excavation confirmation samples will be collected from the excavation bottom and sidewalls using a 50-foot by 50-foot coordinate grid system, i.e. 1 composite sample per grid bottom and 1 composite sample per grid sidewall, for laboratory analysis of total lead. If the laboratory results indicate that the remediation goals have not been achieved, then excavation of the impacted soil will continue until the remediation goals have been achieved and confirmed by laboratory analysis.
- Clean fill from an on-site source located to the south of the Temporary Container Storage Area will be transferred to the North Ditch Staging Area for use as backfill. Samples will be collected from the fill material at a frequency of one sample per source and will be submitted for analysis of total RCRA 8 metals and total petroleum hydrocarbons (TPH) to determine if the fill is usable. The total RCRA 8 metals results will be compared to the Illinois TACO Tier I Soil Remediation Objectives for Industrial/Commercial Properties and the TPH concentration will not exceed 100 ppm. If the TPH concentration exceeds 100 ppm, then the sample will be analyzed for semi-volatile organic compounds (SVOC) and the results will be compared to the Illinois TACO Tier I Soil Remediation Objectives for Industrial/Commercial Properties. If the results are less than the applicable TACO Tier I Soil Remediation Objectives for Industrial/Commercial Properties, then the backfill source will be deemed clean for use. The fill will be placed in the excavation in specified lifts and compacted to original grade.
- A deed restriction will be required under this alternative to limit future use of the unit to commercial/industrial purposes.

Refer to Figure 5 for a summary of the remedial activities associated with this corrective measure alternative for the North Ditch Staging Area.

#### **4.2.3 Alternative No. 3: In-situ Treatment/On-site Containment**

Alternative No. 3 consists of the: 1) identification of characteristically hazardous soil; 2) in-situ treatment of soils that exhibit the toxicity characteristic for lead, if generated, to less than 5 ppm; 3) placement of an



engineered cover over all soils with concentrations of the constituent of concern that exceed the remediation goals; and 4) deed restriction of the North Ditch Staging Area to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover. The components of this alternative are further described as follows:

- Samples will be collected for laboratory analysis from the locations in the North Ditch Staging Area where samples were previously collected in December 2002 to determine if the soil exhibits the toxicity characteristic for lead ( $>5$  mg/l TCLP).
- Based on these results, soil that is determined to exhibit the toxicity characteristic for lead will be treated in-situ within the footprint of the North Ditch Staging Area using the appropriate additive and dosage rate required to achieve a concentration of less than 5 ppm TCLP lead. Verification samples will be collected from the treated soil to ensure that the a concentration of less than 5 ppm TCLP lead was achieved. If the treatment criteria were not achieved, then in-situ treatment will continue until the treatment criteria are achieved and confirmed by laboratory analysis.
- The impacted area will be regraded to achieve the desired slopes prior to placement of the engineered cover. An engineered cover consisting of 6 inches of asphalt will be placed on the impacted area.
- A deed restriction will be required under this alternative to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover.

Refer to Figure 6 for a summary of the remedial activities associated with this corrective measure alternative for the North Ditch Staging Area.

## **5.0 EVALUATION OF CORRECTIVE MEASURES**

The corrective measure alternatives presented in Section 4 are evaluated in this section relative to the seven evaluation/balancing criteria prescribed by RCRA. Those criteria include: long-term effectiveness; implementability; short-term effectiveness; toxicity, mobility and volume reduction; community acceptance; state acceptance; and cost. The components of these criteria are summarized in the following subsection.

### **5.1 Seven Evaluation/Balancing Criteria**

#### **5.1.1 Long-term Effectiveness**

Long-term effectiveness of the corrective measure alternative is assessed by considering the following: the magnitude of risks remaining after the completion of the corrective measure; the type, degree and duration of post-closure care required which will be necessary to protect human health and the environment; the potential for exposure to humans and environmental receptors to contaminants remaining at the facility; the long-term reliability of engineering and institutional controls; and the potential need for replacement of components of the remedy.

#### **5.1.2 Reduction in Toxicity, Mobility or Volume**

Reduction in the toxicity, mobility or volume of waste associated with the corrective measure alternative is assessed by considering the following: the amount of contaminants that will be treated or destroyed; the degree of expected reduction in toxicity, mobility or volume; the type, quantity, toxicity, and mobility of contaminants remaining after treatment; and the degree to which the treatment is reversible.

#### **5.1.3 Short-term Effectiveness**

Short-term effectiveness of the corrective measure alternative is assessed by considering the following: the short-term risks that might be posed to the community, workers or the environment during implementation of the remedy; the effectiveness and reliability of protective measures; and the time until protection is achieved.

#### **5.1.4 Implementability**

Implementability of the corrective measure alternative is assessed by considering the following: the degree of difficulty associated with constructing the remedy; the expected operational reliability of the remedy; the availability of necessary equipment and specialists; and the available capacity and location of needed treatment, storage and disposal services.

#### **5.1.5 Community Acceptance**

Community acceptance of the corrective measure alternative is assessed by considering the following: the concerns raised by the community during the investigation; and any aspects associated with the alternative in which there is potential for community objection.

### **5.1.6 State Acceptance**

State acceptance of the corrective measure alternative is assessed by considering the following: compliance of the alternative with applicable state regulations.

### **5.1.7 Cost**

Cost of the corrective measure alternative is assessed by considering the following: the costs associated with the implementation of the alternative and the costs associated with the operation and maintenance of the alternative. The cost estimates are based on assumed depths of impacted soil/sediment in each unit.

## **5.2 F-Pond**

### **5.2.1 Alternative No. 1: No Action**

Under this alternative, there will be no further remedial, institutional or monitoring activities performed at the F-Pond.

#### Long-term Effectiveness

No additional protection of human health and the environment will be provided under this alternative. Elevated concentrations of lead and iron are present in the F-Pond soils/sediments and will remain under this alternative. Due to the relative lack of mobility and non-biodegradable nature of these constituents, it is unlikely that significant natural degradation will occur over time. The existing risk associated with the F-Pond will not be addressed under this alternative.

#### Reduction in Toxicity, Mobility or Volume

The no action alternative will not reduce the toxicity, mobility or volume of the compounds of concern in the F-Pond soils/sediments. Due to the relative lack of mobility and non-biodegradable nature of these compounds, it is unlikely that significant natural degradation will occur over time.

#### Short-term Effectiveness

The no action alternative will not result in any adverse impacts to on-site workers or the community during implementation because no corrective action will take place.

#### Implementability

The no action alternative is easy to implement because no corrective action activities are required. Additionally, there are no needs required to implement this alternative.

#### Community Acceptance

Community acceptance of the no action alternative may not be easily obtained due to the lack of corrective action associated with the alternative.

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### State Acceptance

The no action alternative will not comply with applicable state regulations found in Illinois Administrative Code Title 35 Subtitle G.

### Cost

There are no costs associated with the no action alternative.

### **5.2.2 Alternative No. 2: In-situ Treatment/Off-site Disposal**

This alternative consists of the dewatering of the F-Pond and the excavation and off-site disposal of approximately 4,000 cubic yards of lead and iron-impacted soil/sediment with concentrations of the constituents of concern that exceed the remediation goals for the F-Pond. The major components of this alternative include the following: 1) dewatering of the F-Pond surface water; 2) identification of characteristically hazardous soils/sediments; 3) in-situ treatment of characteristically hazardous soils/sediments, if present, to render the soils/sediments non-hazardous, when generated; 4) excavation of the treated and impacted soils/sediments to achieve the remediation goals; 5) off-site disposal of the excavated soils/sediments as non-hazardous waste at a Subtitle D disposal facility; and 6) deed restriction of the F-Pond to limit future use of the unit to commercial/industrial purposes.

### Long-term Effectiveness

Long-term, permanent protection of human health and the environment will be achieved by this alternative. Characteristically hazardous soils/sediments will be treated, as needed, and treated and impacted soils/sediments with lead and iron concentrations which exceed the remediation goals will be removed from the facility, eliminating the potential for future exposure to on-site workers or environmental receptors.

No post-closure care will be required for this unit due to the removal and off-site disposal of soils/sediments with concentrations of the constituents of concern that would pose a risk to human health and the environment under commercial/industrial land use scenarios. A deed restriction, however, will be required to limit future use of the unit to commercial/industrial purposes.

### Reduction in Toxicity, Mobility or Volume

The toxicity and volume of the lead and iron-impacted soil/sediment will be reduced within the F-Pond due to the off-site disposal of these materials. The mobility of the lead in the characteristically hazardous soil/sediment, if present, will be reduced by treatment. The treatment process will reduce the leachability of the lead through chemical fixation/stabilization to concentrations below the toxicity characteristic concentrations. The mobility of the lead and iron will also be reduced by containment of the impacted soil/sediment in a permitted Subtitle D landfill.

The lead and iron concentrations left in place in the F-Pond will meet the applicable remediation goals, which have been determined by U.S. EPA Region 9 to be protective of human health and the environment under commercial/industrial land use scenarios.

### Short-term Effectiveness

Dust suppression, water run-off management and other engineering controls will be installed to reduce the potential for short-term impacts to workers and the community during in-situ treatment and excavation. Air monitoring will also be conducted to determine the level of personal protection required for workers during implementation of this alternative.

It is estimated that the implementation of this alternative will take approximately 10 months to complete including planning, submitting administrative documents to U.S. EPA, U.S. ACOE and IEPA for approval and implementing field operations.

### Implementability

This alternative can be implemented at the F-Pond. Chemical fixation/stabilization will be the technology used for treatment. A treatability study will be conducted to determine the appropriate reagent and dosage rate required to render the characteristically hazardous F-Pond soils/sediments, if present, non-hazardous, when generated. The reagents typically used for treatment of lead-impacted soil/sediment are readily available as commercial products.

Standard earth-moving equipment, such as front-end loaders and hydraulic excavators, will be used for treatment and excavation activities. A Subtitle D disposal facility located in the vicinity will be used for the off-site disposal of the treated soil/sediment and the impacted soil/sediment with lead and iron concentrations which exceed the remediation goals.

Environmental contractors trained and experienced in the treatment and excavation of contaminated soils/sediments are available to conduct the work associated with this alternative.

This alternative will prove reliable due to the off-site disposal of the impacted soils/sediments. The risk of exposure to lead and iron concentrations at the area of concern that are considered harmful to human health and the environment will be eliminated.

### Community Acceptance

This alternative should be acceptable to the community based on the fact that the contaminated soil/sediment will be removed from the Keystone facility and the risk of exposure will be eliminated.

### State Acceptance

This alternative complies with the requirements of Illinois Administrative Code Title 35 Subpart G.

### Cost

The estimated cost for implementation of this alternative is approximately \$300,000 to \$350,000.

### 5.2.3 Alternative No. 3: Solidification/On-site Consolidation and Containment

This alternative consists of the dewatering of the F-Pond, solidification and on-site consolidation and containment of approximately 4,000 cubic yards of lead and iron-impacted sediment from the F-Pond. The major components of this alternative include the following: 1) dewatering of the F-Pond surface water; 2) identification of characteristically hazardous soils/sediments, if generated; 3) in-situ treatment of soils/sediments that may exhibit the toxicity characteristic for lead, if generated, to less than 5 parts per million (ppm); 4) solidification of the soil/sediments for stability purposes; 5) consolidation of the treated and impacted soils/sediments to one portion of the F-Pond; 6) placement of an engineered cover over the consolidated soils/sediments with concentrations of the constituents of concern that exceed the remediation goals; and 7) deed restriction of the F-Pond to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover.

#### Long-term Effectiveness

This alternative will provide long-term protection of human health and the environment. The consolidation of impacted soil/sediment within the F-Pond will reduce the surface area of the impacted portion of the F-Pond. The engineered cover placed on the consolidation area will reduce the potential for exposure to impacted soil/sediment by on-site workers and environmental receptors. Lead and iron concentrations left in place in the F-Pond will meet the applicable remediation goals, which have been determined by U.S. EPA Region 9 to be protective of human health and the environment under commercial/industrial land use scenarios.

Post-closure care associated with this alternative will require routine inspection of the engineered cover to ensure that the integrity of the cover has not been compromised. Periodic maintenance of the cover will also be required (repair of eroded areas, mowing vegetated area). A groundwater monitoring program will be required to confirm that there is no migration of the compounds of concern. A deed restriction will be required to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover.

#### Reduction in Toxicity, Mobility or Volume

The toxicity and volume of the lead and iron in the F-Pond soil/sediment will remain unchanged in this alternative. The mobility of the lead in the characteristically hazardous soil/sediment, if present, will, however, be reduced by treatment. The treatment process will reduce the leachability of the lead through chemical fixation/stabilization to concentrations below the toxicity characteristic concentrations. The placement of an engineered cover will also reduce the mobility of the lead and iron in the covered soil/sediment. The engineered cover will eliminate the potential for sediment runoff entering surface waters and infiltration of rainwaters through the impacted soil/sediment.

The lead and iron concentrations left in place in the excavated portions of the F-Pond will meet the applicable remediation goals, which have been determined by U.S. EPA Region 9 to be protective of human health and the environment under commercial/industrial land use scenarios.



### Short-term Effectiveness

Dust suppression, water run-off management and other engineering controls will be installed to reduce the potential for short-term impacts to workers and the community during in-situ treatment, solidification, consolidation, and cover placement. Air monitoring will be conducted to determine the level of personal protection required for workers during implementation of this alternative.

It is estimated that the implementation of this alternative will take approximately 10 months to complete including planning, submitting administrative documents to U.S. EPA, U.S. ACOE and IEPA for approval and implementing field operations.

### Implementability

This alternative can be implemented at the F-Pond. Chemical fixation/stabilization will be the technology used for treatment. A treatability study will be conducted to determine the appropriate reagent and dosage rate required to render the characteristically hazardous F-Pond soils/sediments, if present, non-hazardous, when generated. The reagents typically used for treatment of lead-impacted soil/sediment are readily available as commercial products.

Standard earth-moving equipment, such as front-end loaders, hydraulic excavators and dozers, will be used for treatment, consolidation and cover placement activities. The reagent to be used for solidification of the impacted soil/sediment is readily available on-site. The clay cover material is also readily available on-site in portions of the facility not impacted by facility operations.

Environmental contractors trained and experienced in the treatment and consolidation of contaminated soils/sediments and placement of engineered covers are available to conduct the work associated with this alternative.

The operational reliability of this alternative will be based on the proper construction and maintenance of the engineered cover. The risk of exposure to lead and iron concentrations that are considered harmful to human health and the environment will be reduced due to the placement of the engineered cover.

### Community Acceptance

This alternative should be acceptable to the community based on the fact that the risk of exposure to contaminated soil/sediment will be reduced.

### State Acceptance

This alternative complies with the requirements of Illinois Administrative Code Title 35 Subpart G.

### Cost

The estimated cost for implementation of this alternative is approximately \$200,000 to \$250,000. Operation and maintenance costs associated with the engineered cover are estimated to range from \$5,000

to \$20,000 per year depending on the activities required. Groundwater monitoring costs may range from \$10,000 to \$25,000 per year depending on the frequency required.

### **5.3 North Ditch Staging Area**

#### **5.3.1 Alternative No. 1: No Action**

Under this alternative, there will be no further remedial, institutional or monitoring activities performed at the North Ditch Staging Area.

##### Long-term Effectiveness

No additional protection of human health and the environment will be provided under this alternative. Elevated concentrations of lead are present in the North Ditch Staging Area soils and will remain under this alternative. Due to the relative lack of mobility and non-biodegradable nature of this compound of concern, it is unlikely that significant natural degradation will occur over time. The existing risk associated with the North Ditch Staging Area will not be addressed under this alternative.

##### Reduction in Toxicity, Mobility or Volume

The no action alternative will not reduce the toxicity, mobility or volume of the compound of concern in the North Ditch Staging Area soils. Due to the relative lack of mobility and non-biodegradable nature of the compound of concern, it is unlikely that significant natural degradation will occur over time.

##### Short-term Effectiveness

The no action alternative will not result in any adverse impacts to on-site workers or the community during implementation because no corrective action will take place.

##### Implementability

The no action alternative is easy to implement because no corrective action activities are required. Additionally, there are no needs required to implement this alternative.

##### Community Acceptance

Community acceptance of the no action alternative may not be easily obtained due to the lack of corrective action associated with the alternative.

##### State Acceptance

The no action alternative will not comply with applicable state regulations found in Illinois Administrative Code Title 35 Subtitle G.

##### Cost

There are no costs associated with the no action alternative.

### 5.3.2 Alternative No. 2: CAMU Treatment/Off-site Disposal

This alternative consists of the in-situ treatment, excavation and off-site disposal of approximately 2,800 cubic yards of lead-impacted soil from the North Ditch Staging Area. The major components of this alternative include the following: 1) identification of characteristically hazardous soils; 2) excavation and treatment of characteristically hazardous soils, if present, within a designated storage/treatment CAMU to render the soil non-hazardous and meet the applicable LDRs; 3) excavation of impacted soils to achieve the remediation goals; 4) off-site disposal of the excavated and treated soils as non-hazardous waste at a Subtitle D disposal facility; and 5) deed restriction of the North Ditch Staging Area to limit future use of the unit to commercial/industrial purposes.

#### Long-term Effectiveness

Long-term, permanent protection of human health and the environment will be achieved by this alternative. Characteristically hazardous soils will be treated, as needed, and treated and impacted soils with lead concentrations which exceed the remediation goals will be removed from the facility, eliminating the potential for future exposure to on-site workers or environmental receptors.

No post-closure care will be required for this unit due to the removal and off-site disposal of soils that would pose a risk to human health and the environment. A deed restriction, however, will be required to limit future use of the unit to commercial/industrial purposes.

#### Reduction in Toxicity, Mobility or Volume

The toxicity and volume of the lead-impacted soil will be reduced within the North Ditch Staging Area due to the off-site disposal of this material. The mobility of the lead in the characteristically hazardous soil will be reduced by treatment. The treatment process will reduce the leachability of the lead through chemical fixation/stabilization to concentrations below the toxicity characteristic concentrations. The mobility of the lead will also be reduced by containment of the impacted soil in a permitted Subtitle D landfill.

The lead concentrations left in place in the North Ditch Staging Area will meet the applicable remediation goals, which have been determined by U.S. EPA Region 9 to be protective of human health and the environment under commercial/industrial land use scenarios.

#### Short-term Effectiveness

Dust suppression, water run-off management and other engineering controls will be installed to reduce the potential for short-term impacts to workers and the community during excavation and treatment. Air monitoring will also be conducted to determine the level of personal protection required for workers during implementation of this alternative.

It is estimated that the implementation of this alternative will take approximately 7 months to complete including planning, submitting administrative documents to U.S. EPA for approval and implementing field operations.

### Implementability

This alternative can be implemented at the North Ditch Staging Area. Chemical fixation/stabilization will be the technology used for treatment. A treatability study will be conducted to determine the appropriate reagent and dosage rate required to render the characteristically hazardous North Ditch Staging Area soils non-hazardous. The reagents typically used for treatment of lead-impacted soil/sediment are readily available as commercial products.

Standard earth-moving equipment, such as front-end loaders and hydraulic excavators, will be used for excavation and treatment activities. A Subtitle D disposal facility located in the vicinity will be used for the off-site disposal of the treated soil and the impacted soil with lead concentrations which exceed the remediation goals.

Environmental contractors trained and experienced in the treatment and excavation of contaminated soils are available to conduct the work associated with this alternative.

This alternative will prove reliable due to the off-site disposal of the impacted soils. The risk of exposure to lead concentrations at the area of concern that are considered harmful to human health and the environment will be eliminated.

### Community Acceptance

This alternative should be acceptable to the community based on the fact that the contaminated soil will be removed from the facility and the risk of exposure eliminated.

### State Acceptance

This alternative complies with the requirements of Illinois Administrative Code Title 35 Subpart G.

### Cost

The estimated cost for implementation of this alternative is approximately \$300,000 to \$350,000.

### **5.3.3 Alternative No. 3: In-situ Treatment/On-site Containment**

This alternative consists of the in-situ treatment and containment of approximately 2,800 cubic yards of lead-impacted soil from the North Ditch Staging Area. The major components of this alternative include the following: 1) identification of characteristically hazardous soil; 2) in-situ treatment of soils that exhibit the toxicity characteristic for lead, if generated, to less than 5 ppm; 3) placement of an engineered cover over all soils with concentrations of the constituent of concern that exceed the remediation goals; and 4) deed restriction of the North Ditch Staging Area to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover.

### Long-term Effectiveness

This alternative will provide long-term protection of human health and the environment. The placement of an engineered cover on the treated soils will reduce the potential for exposure to the impacted soil by on-site workers and environmental receptors. Lead concentrations left in place in the North Ditch Staging Area will meet the remediation goals, which have been determined by U.S. EPA Region 9 to be protective of human health and the environment under commercial/industrial land use scenarios.

Post-closure care associated with this alternative will require routine inspection of the engineered cover to ensure that the integrity of the cover has not been compromised. Periodic maintenance of the cover, i.e. repair of cracked or eroded areas, will also be required. A deed restriction will be required to limit future use of the unit to commercial/industrial purposes and to maintain the integrity of the engineered cover.

### Reduction in Toxicity, Mobility or Volume

The toxicity and volume of the lead in the North Ditch Staging Area soil will remain unchanged in this alternative. The mobility of the lead in the characteristically hazardous sediment will, however, be reduced by treatment. The treatment process will reduce the leachability of the lead through chemical fixation/stabilization to concentrations below the toxicity characteristic concentrations. The placement of an engineered cover will also reduce the mobility of the lead in the covered soil. The engineered cover will eliminate the potential for soil runoff entering surface waters and infiltration of rainwaters through the impacted soil.

### Short-term Effectiveness

Dust suppression, water run-off management and other engineering controls will be installed to reduce the potential for short-term impacts to workers and the community during in-situ treatment and cover placement. Air monitoring will be conducted to determine the level of personal protection required for workers during implementation of this alternative.

It is estimated that the implementation of this alternative will take approximately 8 months to complete including planning, submitting administrative documents to U.S. EPA for approval and implementing field operations.

### Implementability

This alternative can be implemented at the North Ditch Staging Area. Chemical fixation/stabilization will be the technology used for treatment. A treatability study will be conducted to determine the appropriate reagent and dosage rate required to render the characteristically hazardous North Ditch Staging Area soil non-hazardous. The reagents typically used for treatment of lead-impacted soil/sediment are readily available as commercial products.

Standard earth-moving equipment, such as front-end loaders, hydraulic excavators and dozers, will be used for treatment and cover placement activities. Environmental contractors trained and experienced in the treatment of contaminated soil and placement of engineered covers are available to conduct the work associated with this alternative.

The operational reliability of this alternative will be based on the proper construction and maintenance of the engineered cover. The risk of exposure to lead concentrations at the area of concern that are considered harmful to human health and the environment will be reduced.

#### Community Acceptance

This alternative should be acceptable to the community based on the fact that the risk of exposure to contaminated soil will be reduced at the facility.

#### State Acceptance

This alternative complies with the requirements of Illinois Administrative Code Title 35 Subpart G.

#### Cost

The estimated cost for implementation of this alternative is approximately \$200,000 to \$250,000. Operation and maintenance costs associated with the engineered cover are estimated to range from \$1,000 to \$10,000 per year depending on the activities required.



## 6.0 CORRECTIVE MEASURES RECOMMENDATION

The corrective measures alternatives developed for the Keystone facility were evaluated in Section 5 using the seven evaluation/balancing criteria prescribed by RCRA. In this section, the corrective measures recommended for the F-Pond and North Ditch Staging Area are presented.

### 6.1 Selected Measures

#### 6.1.1 F-Pond

*must include gw. info see  
comment on letter to include in  
the S.O.B*

The recommended corrective measure for the F-Pond is Alternative No. 2, In-situ Treatment/Off-site Disposal. This corrective measure alternative will be implemented as follows:

- The surface water present in the F-Pond will be sampled to determine the nature and concentration of the contaminants of concern identified during the previous investigation, i.e. lead, iron, manganese, and TCE. Based on these results, the surface water will be transferred directly to the facility's WWTP for treatment, if needed, and discharge under the facility's industrial discharge permit. This discharge will be conducted by Keystone in compliance with the limits established in the NPDES industrial discharge permit. The F-Pond will be dewatered by installing a system of pumps and hoses designed to transfer the water as appropriate. A berm will be constructed at the outlet to Long Lake to further isolate the F-Pond and prevent waters from entering the work area.
- Samples will be collected from the F-Pond soil/sediment for laboratory analysis to determine if any of the soil/sediment exhibits the toxicity characteristic for lead ( $> 5$  mg/l TCLP). A 50-foot by 50-foot coordinate grid system will be used to guide the collection of these characterization samples, i.e. 1 composite sample will be collected from each 50-foot grid. The samples will be submitted for analysis of TCLP lead. Additional samples may be collected using the 50-foot grid system for delineation purposes, i.e. 1 composite sample per 50-foot grid. These samples will be submitted for analysis of total lead and total iron.
- Based on the characterization results, soil/sediment that is determined to exhibit the toxicity characteristic for lead ( $> 5$  mg/l TCLP) will be treated in-situ within the footprint of the F-Pond to render the soil/sediment non-hazardous, when generated. A treatability study will be conducted to determine the appropriate additive and dosage rate required to accomplish this. Upon the completion of in-situ treatment activities, composite samples will be collected to verify that the treatment criteria were achieved, i.e.  $< 5$  mg/l TCLP lead. If the treatment criteria were not achieved, then in-situ treatment will be continue until the treatment criteria are achieved and confirmed by laboratory analysis.
- Impacted soil/sediment with concentrations of the constituents of concern that exceed the remediation goals, i.e. 800 mg/kg total lead and 100,000 mg/kg total iron, will be dried or solidified, as needed, to ensure that free liquids are not present in the material for off-site disposal purposes.
- The treated soil/sediment and impacted soil/sediment with concentrations of the constituents of concern that exceed the remediation goals, i.e. 800 mg/kg total lead and 100,000 mg/kg total iron,

will be excavated to the appropriate depth to achieve these goals, as guided by the use of an XRF field screening unit. The excavated soil/sediment will be temporarily stockpiled within the limits of the F-Pond for consolidation purposes prior to off-site disposal as non-hazardous waste at a Subtitle D disposal facility.

- When XRF field screening indicates that excavation is complete, post-excavation confirmation samples will be collected to confirm that the remediation goals have been achieved. The post-excavation confirmation samples will consist of composite samples collected from the bottom and sidewalls of the excavation using the established 50-foot by 50-foot coordinate grid system, i.e. 1 composite sample per grid bottom and 1 composite sample per grid sidewall, for laboratory analysis of total lead and iron. If the laboratory results indicate that the remediation goals have not been achieved, then excavation of the impacted soil/sediment will continue until the remediation goals have been achieved and confirmed by laboratory analysis.
- The excavated portions of the F-Pond will be restored pursuant to the requirements of the Nationwide Permit 38 approved by the U.S. ACOE.
- A deed restriction will be required under this alternative to limit future use of the unit to commercial/industrial purposes.

#### 6.1.2 North Ditch Staging Area

The recommended corrective measure for the North Ditch Staging Area is Alternative No. 2, CAMU Treatment/Off-site Disposal. This corrective measure alternative will be implemented as follows:

- Samples will be collected for laboratory analysis from the locations in the North Ditch Staging Area where samples were previously collected in December 2002 to determine if the soil exhibits the toxicity characteristic for lead ( $>5$  mg/l TCLP).
- Based on these results, soil that is determined to exhibit the toxicity characteristic for lead will be excavated and temporarily stockpiled within the storage/treatment CAMU. (The storage/treatment CAMU will be located within the limits of the North Ditch Staging Area). The temporary soil stockpiles will then be treated using the appropriate additive and dosage rate required to render the soil non-hazardous and meet the applicable LDRs using hydraulic excavators equipped with mixing devices. Verification samples will be collected from the treated soil stockpiles at the frequency required to meet the receiving landfill's requirements to verify that the alternative LDR treatment standards for contaminated soil, pursuant to 40 CFR §268.49, have been met. If the treatment criteria were not achieved, then in-situ treatment will continue until the treatment criteria are achieved and confirmed by laboratory analysis.
- Impacted soils with lead concentrations that exceed the remediation goal of 800 mg/kg will be excavated to the appropriate depth (estimated to be approximately 2 feet below ground surface), as guided by the use of an XRF field screening unit. The excavated soil will be temporarily stockpiled within the limits of the North Ditch Staging Area pending off-site disposal as non-hazardous waste at a Subtitle D disposal facility.

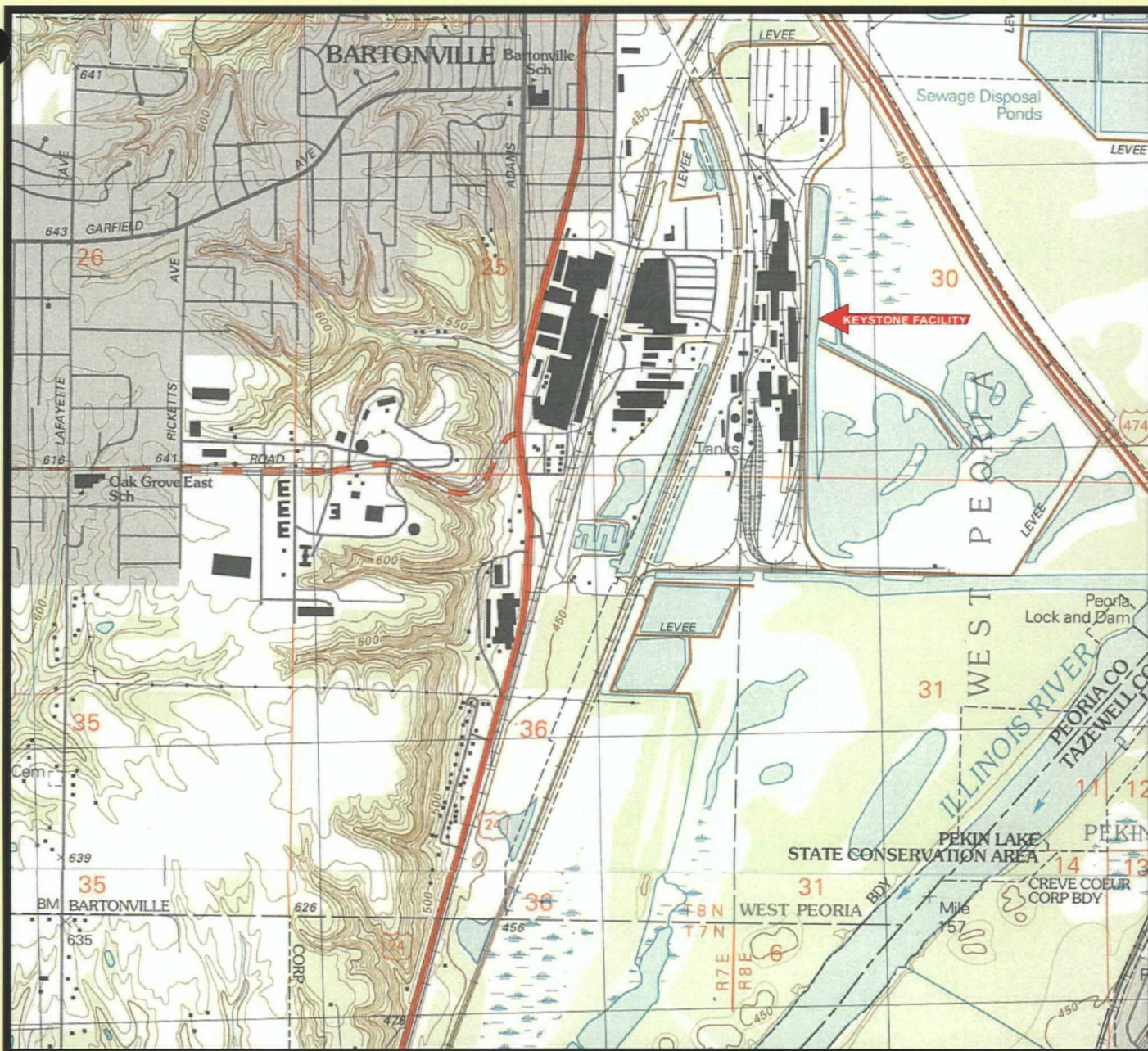
- When XRF field screening indicates that excavation is complete, post-excavation confirmation samples will be collected to confirm that the remediation goals have been achieved. Post-excavation confirmation samples will be collected from the excavation bottom and sidewalls using a 50-foot by 50-foot coordinate grid system, i.e. 1 composite sample per grid bottom and 1 composite sample per grid sidewall, for laboratory analysis of total lead. If the laboratory results indicate that the remediation goals have not been achieved, then excavation of the impacted soil will continue until the remediation goals have been achieved and confirmed by laboratory analysis.
- Clean fill from an on-site source located to the south of the Temporary Container Storage Area will be transferred to the North Ditch Staging Area for use as backfill. Samples will be collected from the fill material at a frequency of one sample per source and will be submitted for analysis of total RCRA 8 metals and TPH to determine if the fill is usable. The total RCRA 8 metals results will be compared to the Illinois TACO Tier I Soil Remediation Objectives for Industrial/Commercial Properties and the TPH concentration will not exceed 100 ppm. If the TPH concentration exceeds 100 ppm, then the sample will be analyzed for SVOCs and the results will be compared to the Illinois TACO Tier I Soil Remediation Objectives for Industrial/Commercial Properties. If the results are less than the applicable TACO Tier I Soil Remediation Objectives for Industrial/Commercial Properties, then the backfill source will be deemed clean for use. The fill will be placed in the excavation in specified lifts and compacted to original grade.
- A deed restriction will be required under this alternative to limit future use of the unit to commercial/industrial purposes.

## **6.2 Evaluation of Selected Measures**

The recommended corrective measures for the F-Pond and North Ditch Staging Area will collectively achieve the corrective action objectives for the Keystone facility, as described in Section 3.0. The selected measures will provide long-term protection by excavating the soils/sediments with concentrations of the constituents of concern that pose a threat to human health and the environment and disposing of the contamination at an off-site disposal facility, thus eliminating the potential for direct exposure to on-site workers or environmental receptors. The toxicity and mobility of the hazardous soils/sediments will be reduced or eliminated through treatment and off-site disposal. The short-term effectiveness of the corrective measures will be controlled during implementation by dust suppression, water run-off management and other engineering controls. The implementation of the selected measures will allow for the greatest potential for reuse of the units by the facility, i.e. the North Ditch Staging Area as a facility parking lot.

The estimated timeframes to complete the selected remedies for the F-Pond and North Ditch Staging Area are presented as Figure 7 to this proposal.



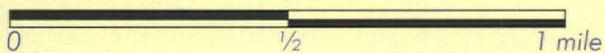


After U.S.G.S. 7.5 Minute Topographic Quadrangles, Peoria West and Pekin, Illinois, 1996, Contour Interval 10 feet



Illinois

Scale



Quadrangle Location

**FIGURE TITLE:** Site Location Map

**CLIENT:** Keystone Steel & Wire Company

**DOCUMENT TITLE:** Revised Final Corrective Measures Proposal

**LOCATION:** Peoria, Illinois



**ENTACT**

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**DATE:** 02/2005

**PREPARED BY:** DM

**SCALE:** As Shown

**CHECKED BY:** JE

**PROJECT NO:** D1154

**FIGURE NO:** 1









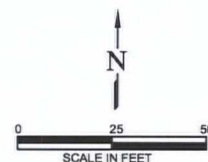




#### Notes:

The location of in-situ treatment, solidification and excavation areas will be dependent on the analytical results from the CMP sampling event to be conducted at the start of the corrective measures activities.

The in-situ treatment, solidification and excavation areas marked on this map are based on existing analytical data.



#### LEGEND

- Limits of the F-Pond
- ▲ Former Sample Points with Lead and Iron Concentrations (mg/kg)
- ▲ Former Sample Points Which Require Excavation (Concentration Exceeds PRG)
- Excavation Areas
- Containment Area
- 50x50 Grid
- Post-Excavation Confirmation Sample Locations

Base map taken from "Environmental Indicators Assessment Report" dated January 2002.

### F-POND CORRECTIVE MEASURE ALTERNATIVE NO. 3 UNIT LAYOUT MAP

KEYSTONE STEEL & WIRE  
PEORIA, ILLINOIS

FIGURE 4

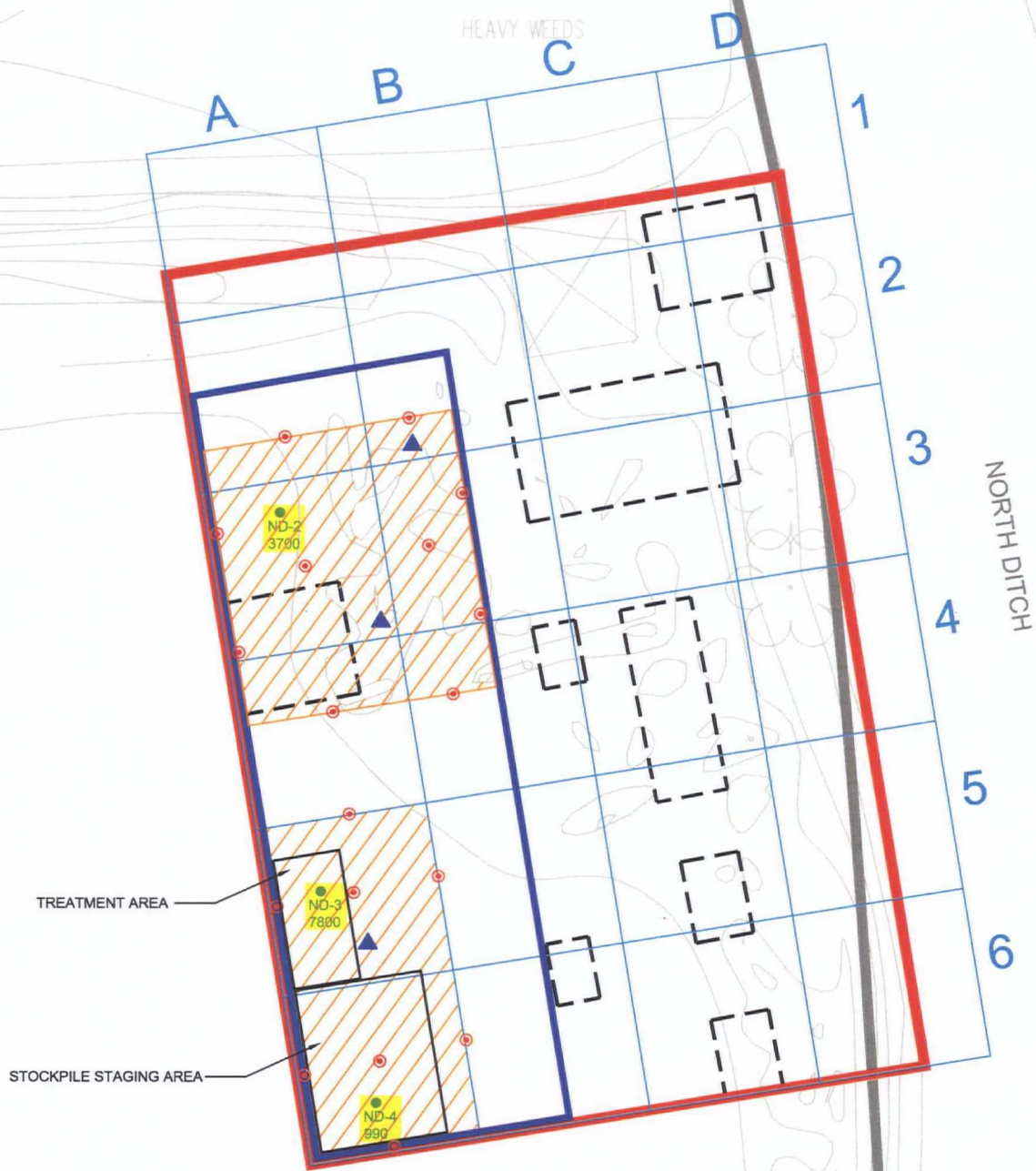
NO.	DATE	REVISION	APP.

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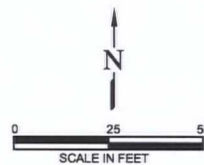


Notes:  
The location of the treatment area will be dependent on the analytical results from the CMP sampling event to be conducted at the start of the corrective measures activities.

The excavation, treatment and backfill areas marked on this map are based on existing analytical data.

**LEGEND**

- Limits of North Ditch Staging Area
- Locations of Former Treatment System Structures
- December 2002 Sample Locations and Lead Concentrations in mg/kg (Concentration Exceeds PRG)
- ▲ Former Sample Points (Concentration Exceeds PRG)
- Limits of Storage/Treatment CAMU
- Characterization Sample Locations
- 50 x 50 Foot Grid
- Excavation and Backfill Areas
- ⊙ Post-excavation Confirmation Sample Locations



Base map taken from "Final Corrective Measures Proposal" dated January 2003.

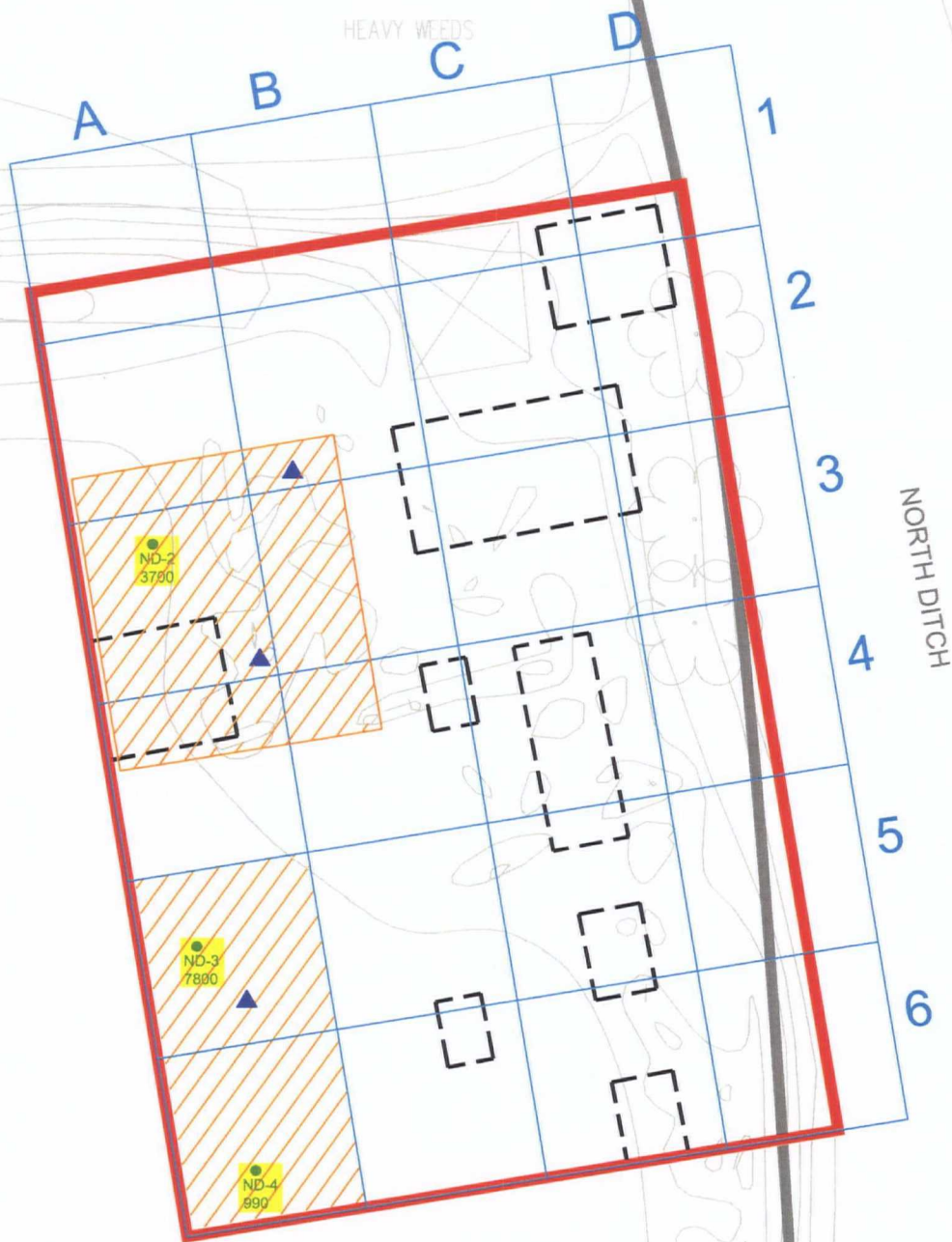
**NORTH DITCH STAGING AREA  
CORRECTIVE MEASURE ALTERNATIVE NO. 2  
UNIT LAYOUT MAP**

KEYSTONE STEEL & WIRE  
PEORIA, ILLINOIS

FIGURE 5

NO.	DATE	REVISION	APP.





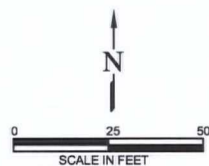
#### Notes:

The location of the treatment area will be dependent on the analytical results from the CMP sampling event to be at the start of the corrective measures activities.

The treatment and containment areas marked on this map are based on existing analytical data.

#### LEGEND

- Limits of North Ditch Staging Area
- Locations of Former Treatment System Structures
- December 2002 Sample Locations and Lead Concentrations in mg/kg (Concentration Exceeds PRG)
- ▲ Former Sample Points (Concentration Exceeds PRG)
- Characterization Sample Locations
- 50 x 50 Foot Grid
- Containment Area



Base map taken from "Final Corrective Measures Proposal" dated January 2003.

### NORTH DITCH STAGING AREA CORRECTIVE MEASURE ALTERNATIVE NO. 3 UNIT LAYOUT MAP

KEYSTONE STEEL & WIRE  
PEORIA, ILLINOIS

FIGURE 6

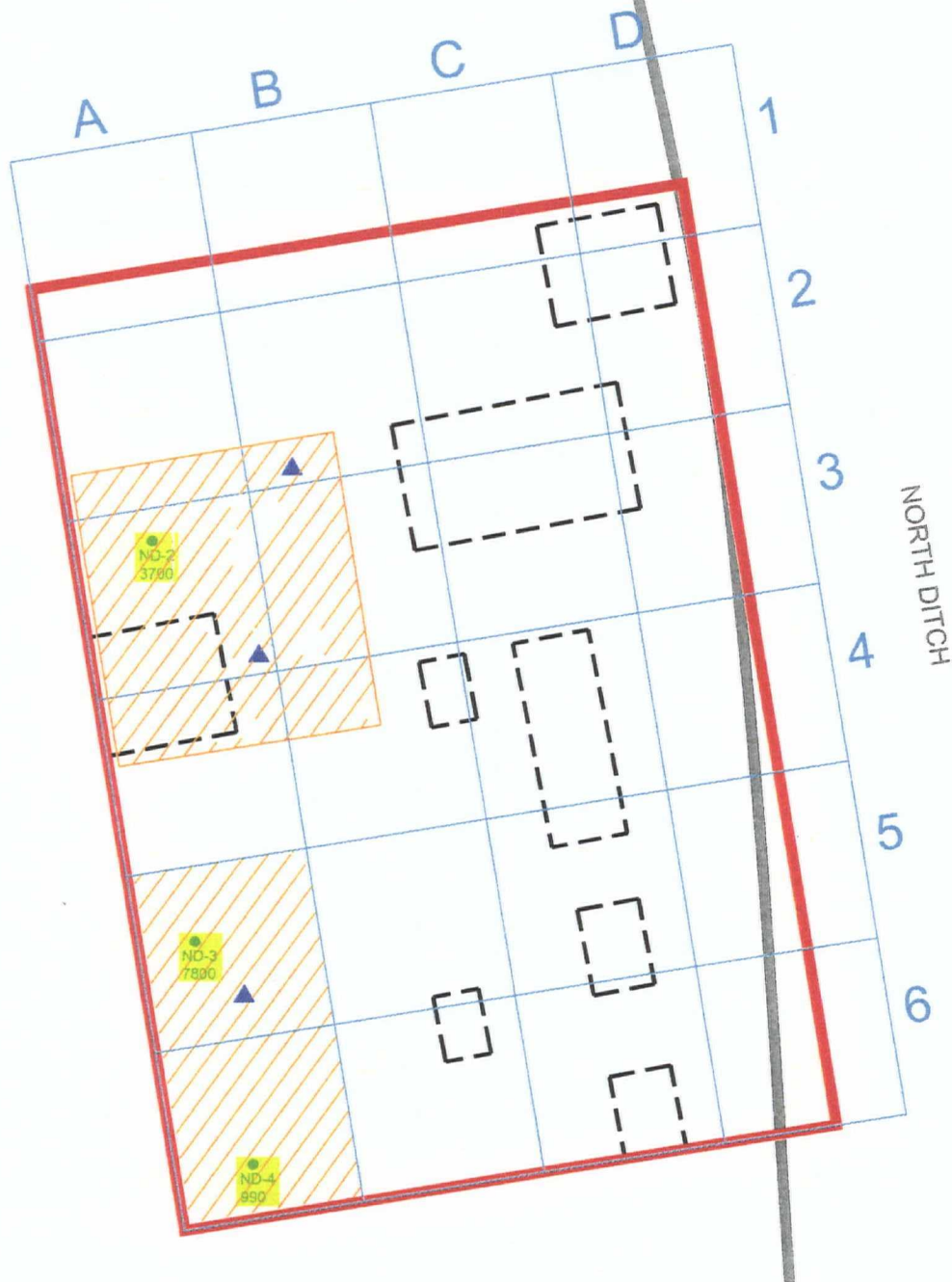
NO.	DATE	REVISION	APP.

**ENTACT**  
environmental services

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Dallas • Houston • Chicago • Atlanta

Scale: 1"=50' Drawn By: — Checked By: — Date: 11-24-04





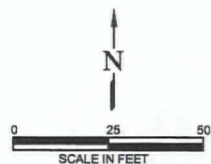
**Notes:**

The location of the treatment area will be dependent on the analytical results from the CMP sampling event to be at the start of the corrective measures activities.

The treatment and containment areas marked on this map are based on existing analytical data.

**LEGEND**

- Limits of North Ditch Staging Area
- - - Locations of Former Treatment System Structures
- December 2002 Sample Locations and Lead Concentrations in mg/kg (Concentration Exceeds PRG)
- ▲ Former Sample Points (Concentration Exceeds PRG)
- Characterization Sample Locations
- 50 x 50 Foot Grid
- Containment Area



Base map taken from "Final Corrective Measures Proposal" dated January 2003.

**NORTH DITCH STAGING AREA  
CORRECTIVE MEASURE ALTERNATIVE NO. 3  
UNIT LAYOUT MAP**

KEYSTONE STEEL & WIRE  
PEORIA, ILLINOIS

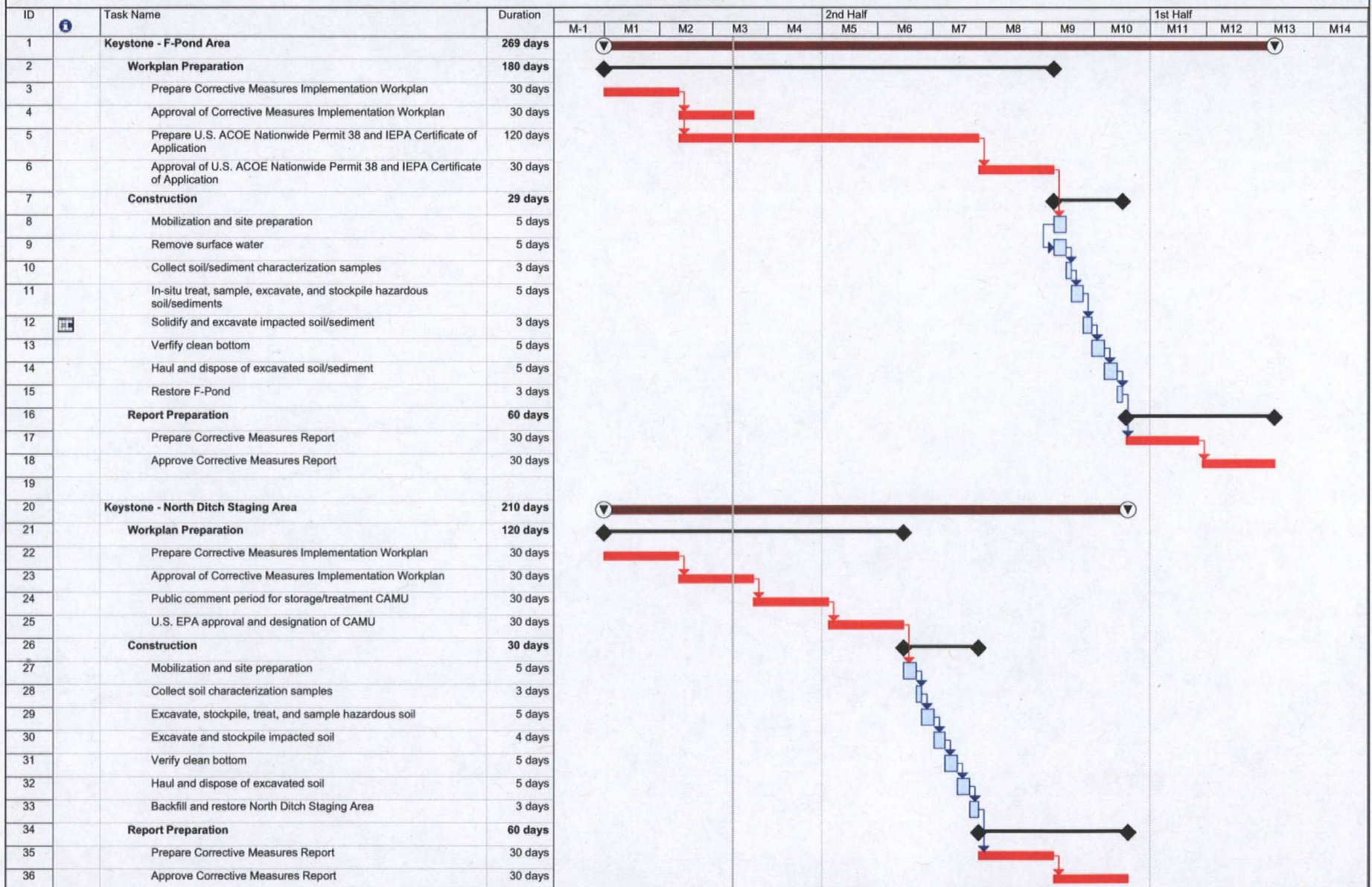
FIGURE 6

NO.	DATE	REVISION	APP.



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**FIGURE 7**  
**PROPOSED CORRECTIVE MEASURES PROJECT SCHEDULE**  
 Keystone Steel and Wire Company  
 Peoria, Illinois



Project: North Ditch and F-pond Shedu  
 Date: Thu 5/12/05

Task Progress  
 Split Milestone

Progress   
 Milestone

Summary   
 Project Summary

External Tasks   
 External Milestone

Deadline